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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BURD, KEVIN MICHAEL	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/671,346	BORRAN ET AL.	
	Examiner	Art Unit	
	Kevin M. Burd	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *41,42,45-50,53-58 and 61-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41,42,45-50,53-58 and 61-75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/18/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. This office action, in response to the remarks filed 1/18/2008, is a non-final office action.

Response to Arguments

2. Applicant's arguments with respect to claims 41, 42, 45-50 and 53-58 have been considered and are persuasive. The previous rejection to the claims under 35 U.S.C. 102(b) as being anticipated by "On Design Criteria and Construction of Non-coherent Space-Time Constellations" by Mohammad Jaber Borran et al published 10/22/2001 is withdrawn. The publication date used by the examiner is not the publication date or a date the document was publicly posted. As pointed out by applicant, MPEP 2128 states prior art disclosures on the Internet or on an on-line database are considered to be publicly available as of the date that the disclosure was publicly posted. Absent evidence of the date that the disclosure was publicly posted, if the publication itself does not include a publication date (or retrieval date), it cannot be relied upon as prior art under 35 U.S.C. 102(a) or (b). The previous rejections of the claims are withdrawn.

3. A new rejection of claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58 and 61-75 are rejected under 35 U.S.C. 102(a) as being anticipated by "On Design Criteria and Construction of Non-coherent Space-Time Constellations" by Mohammad Jaber Borran et al is stated below. Additional support is provided that states the reference was published on 7/20/2002. A copy of the reference, the Rice Digital Scholarship Archive webpage that states the reference was published on "2002-07-20", additional

information from the Rice Digital Scholarship Archive indicating the "full item of record" which discloses the previous issue date of this reference was 2002-07-20 and the previous submitted date was 2001-11-08, and a screen shot showing the link corresponding to the reference is provided. Though the publication itself does not include the publication date (or retrieval date), evidence of the date that the disclosure was publicly posted is provided. The document was located through the Rice Digital Scholarship Archive's Electrical and Computer Engineering publications search engine. A search using author "Don Johnson" yielded the "On Design Criteria and Construction of Non-coherent Space-Time Constellations" by Mohammad Jaber Borran et al document.

4. A new rejection of claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58 and 61-75 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter is stated below. The document "On Design Criteria and Construction of Non-coherent Space-Time Constellations" by Mohammad Jaber Borran et al discloses the limitations of the claims. The inventive entity of this reference is different than the inventive entity of the instant application. MPEP 2137 states:

> Where it can be shown that an applicant "derived" an invention from another, a rejection under 35 USC 102(f) is proper. *Ex parte Kusko*, 215 USPQ 972, 974 (Bd. App. 1981) ("most, if not all, determinations under section 102(f) involve the question of whether one party derived an invention from another").
>
> While derivation will bar the issuance of a patent to the deriver, a disclosure by the deriver, absent a bar under 35 USC 102(b), will not bar the issuance of a patent to the party from which the subject matter was derived. *In re Costello*, 717 F.2d 1346, 1349, 219 USPQ 389, 390-91 (Fed. Cir. 1983) ("[a] prior art reference that is not a statutory bar may be overcome by two generally recognized methods": an affidavit under 37CFR 1.131, or an affidavit under 37 CFR 1.132 "showing that the relevant disclosure is a description of the applicant's own work"); *In re Facius*, 408 F.2d 1396, 1407, 161 USPQ 294, 302 (CCPA 1969) (subject matter incorporated into

a patent that was brought to the attention of the patentee by applicant, and hence derived by the patentee from the applicant, is available for use against applicant unless applicant had actually invented the subject matter placed in the patent).

5. A request for information under 37 CFR 1.105(a) regarding the document "On Design Criteria and Construction of Non-coherent Space-Time Constellations" by Mohammad Jaber Borran et al is recited herein. Applicant has provided additional documents in the response filed 1/18/2008 but did not provide information regarding the publication of this document. The examiner formally requests publication information of this document. Rice Digital Scholarship Archive indicates this document was published on "2002-07-20". The examiner requests all additional information regarding the publication of this document. In addition, the examiner requests all published documents regarding the presentation made at the 2002 IEEE International Symposium on Information Theory. The four authors of the "On Design Criteria and Construction of Non-coherent Space-Time Constellations" document made a presentation titled "On Design Criteria and Construction of Non-coherent Space-Time Constellations" on June 30, 2002.

6. A new rejection of claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58 and 61-75 are rejected under 35 U.S.C. 102(a) as being anticipated by "Constellations for Imperfect Channel State Information at the Receiver" by Borran et al is also provided below. A copy of this document is provided in the IDS filed 1/18/2008.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (f) he did not himself invent the subject matter sought to be patented.

7. Claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58 and 61-75 are rejected under 35 U.S.C. 102(a) as being anticipated by "On Design Criteria and Construction of Non-coherent Space-Time Constellations" by Mohammad Jaber Borran et al.

Regarding claims 41, 42, 49, 50, 57 and 58, Borran discloses a method and apparatus for transmitting a signal. A bit stream is input and a characteristic for a wireless channel is determined. The characteristic is the signal to noise ratio (page 2, II system model). The constellation is selected by determining an optimal constellation from all possible constellations. Adopting the KL distance as performance criterion, the signal set design criterion in general will be maximization of the minimum KL distance between distributions assigned to the signal points (page 3, III design criterion). To use the determined constellations, the bit stream will be converted to symbols and transmitted (page 1, I introduction).

Regarding claims 45 and 53, the signal to noise ratio is determined from the received signal (page 2, II system model).

Regarding claims 46 and 54, the signal to noise ratio is determined from the received signal (page 2, II system model). The received signal is determined by the number of transmit and receive antennas used in the system.

Regarding claims 61-75, figure 2 discloses the constellations used to transmit eh transmission signal. Figure 2 is a two dimensional representation of the selected signal constellations. The constellations comprise sub-constellations for each ring shown in the figure.

8. Claim 41, 42, 45, 46, 49, 50, 53, 54, 57, 58 and 61-75 are rejected under 35 U.S.C. 102(a) as being anticipated by "Constellations for Imperfect Channel State Information at the Receiver" by Borran et al.

Regarding claims 41, 42, 49, 50, 57 and 58, Borran discloses a method and apparatus for transmitting a signal. A bit stream is input and a characteristic for a wireless channel is determined. The characteristic is the signal to noise ratio (pages 2-3, 2 System Model). The constellation is selected by determining an optimal constellation from all possible constellations. Adopting the KL distance as performance criterion, the signal set design criterion in general will be maximization of the minimum KL distance between distributions assigned to the signal points (pages 3-4, 3 Design Criterion). To use the determined constellations, the bit stream will be converted to symbols and transmitted (pages 1-2, 1 Introduction).

Regarding claims 45 and 53, the signal to noise ratio is determined from the received signal (page 2-3, 2 System Model).

Regarding claims 46 and 54, the signal to noise ratio is determined from the received signal (page 2-3, 2 System Model). The received signal is determined by the number of transmit and receive antennas used in the system.

Regarding claims 61-75, figure 1 discloses the constellations used to transmit the transmission signal. Figure 1 is a two dimensional representation of the selected signal constellations. The constellations comprise sub-constellations for each ring shown in the figure (16-point).

9. Claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58 and 61-75 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter.

As stated above, "On Design Criteria and Construction of Non-coherent Space-Time Constellations" by Mohammad Jaber Borran et al disclosed the subject matter of the claims. The inventive entity of this document is different than the inventive entity of the instant application. Therefore, the authorship of the article is by another.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 47, 48, 55 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over "On Design Criteria and Construction of Non-coherent Space-Time Constellations" by Mohammad Jaber Borran et al in view of Won (US 7,269,436).

Regarding claims 47, 48, 55 and 56, Borran discloses the method and apparatus stated above in paragraph 7. Borran does not disclose the number of transmit antennas

is determined from a message received over the wireless channel. Won discloses the transmitter can estimate the channel covariance matrix using a preamble transmitted from the receiver. The transmitter can also update the number of antennas and the power allocation according to the eigenvalues of the estimated covariance matrix (column 7, lines 42-48). Therefore, the number of transmit antennas is determined from the information in the preamble (header) of the received signal. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teaching of Won into the method and apparatus of Borran. Controlling the number of antennas used according the channel conditions will minimize the power consumed by the transmitter, reducing the cost of operating the transmission system.

11. Claims 47, 48, 55 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Constellations for Imperfect Channel State Information at the Receiver" by Borran et al in view of Won (US 7,269,436).

Regarding claims 47, 48, 55 and 56, Borran discloses the method and apparatus stated above in paragraph 8. Borran does not disclose the number of transmit antennas is determined from a message received over the wireless channel. Won discloses the transmitter can estimate the channel covariance matrix using a preamble transmitted from the receiver. The transmitter can also update the number of antennas and the power allocation according to the eigenvalues of the estimated covariance matrix (column 7, lines 42-48). Therefore, the number of transmit antennas is determined from the information in the preamble (header) of the received signal. It would have been

obvious for one of ordinary skill in the art at the time of the invention to combine the teaching of Won into the method and apparatus of Borran. Controlling the number of antennas used according the channel conditions will minimize the power consumed by the transmitter, reducing the cost of operating the transmission system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Burd/
Primary Examiner, Art Unit 2611
4/2/2008